Amendment to the Claims:

1. (Currently Amended) A method for modifying a planar image slice in a CT scanner having a predetermined reconstruction angle, comprising:

collecting X-ray attenuation data over a plurality of sectors, each sector having an angular extent substantially less than a reconstruction ~~processor~~ angle;

reconstructing an image of the slice using initial X-ray attenuation data acquired along an initial scan path sector including a contiguous subset of the plurality of sectors that span the reconstruction angle; and

modifying the image in accordance with a difference between the radiation attenuation data collected in (1) one of the sectors of the subset of sectors and (2) one of the sectors outside of the subset of sectors, to provide a modified image of the slice.

2. (Original) A method according to claim 1, and comprising defining a region of interest within the image slice, wherein modifying the image comprises modifying only a portion of the image corresponding to the region of interest.

3. (Original) A method according to claim 2, wherein defining the region of interest comprises identifying an object of interest and altering the region of interest in response to movement of the object.

4. (Previously Presented) A method for modifying a planar image slice in a CT scanner having a predetermined reconstruction angle, the method comprising:

reconstructing an image of the slice using initial X-ray attenuation data acquired along an initial scan path sector;

acquiring additional X-ray attenuation data along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than the reconstruction angle;

defining a region of interest within the image slice to include an object of interest;

determining a characteristic of the X-ray attenuation data indicative of the position of the object;

shifting the region of interest in response to a change in the characteristic; and

modifying a portion of the image corresponding to the region of interest to provide a modified image of the slice, responsive to the additional attenuation data.

5. (Original) A method according to claim 4, wherein determining the characteristic of the X-ray attenuation data comprises finding a maximum value of the data within a data window corresponding to the region of interest.

6. (Original) A method according to claim 5, wherein finding the maximum value of the data comprises pre-processing the data and finding a maximum value of the pre-processed data.

7. (Previously Presented) A method according to claim 4, wherein the data along the initial and additional scan path sectors comprises acquiring multi-slice data acquired along the sectors of the scan path.

8. (Previously Presented) A method according to claim 4, wherein data acquired along the sectors of the scan path comprises data acquired along sectors of a helical scan path.

9. (Original) A method according to claim 7, wherein data acquired along the scan path sectors comprises data acquired along sectors of a generally circular scan path substantially within a plane at the axial position of the slice.

10. (Previously Presented) A method for modifying a planar image slice in a CT scanner having a predetermined reconstruction angle, the method comprising:

reconstructing an image of the slice using initial X-ray attenuation data acquired along an initial scan path sector;

acquiring additional X-ray attenuation data along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than the reconstruction angle;

processing the additional attenuation data and the initial attenuation data to produce a difference image data matrix which represents a difference between corresponding initial attenuation data and additional attenuation data values; and

adding the difference matrix to the image.

11. (Previously Presented) A method for modifying a planar image slice in a CT scanner having a predetermined reconstruction angle, comprising:

reconstructing an image of the slice using initial X-ray attenuation data acquired along an initial scan path sector;

acquiring additional X-ray attenuation data along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than the reconstruction angle;

back-projecting attenuation values calculated from the additional data, to determine a first preliminary matrix;

back-projecting attenuation values calculated from the initial data that were acquired in a portion of the initial scan path sector corresponding to the additional scan path sector, to determine a second preliminary matrix;

subtracting the second preliminary matrix from the first preliminary matrix to produce an image data matrix; and

adding the produced image data matrix to the image.

12. (Previously Presented) A method for modifying a planar image slice in a CT scanner having a predetermined reconstruction angle, comprising:

reconstructing an image of the slice using initial X-ray attenuation data acquired along an initial scan path sector;

acquiring additional X-ray attenuation data along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than the reconstruction angle;

calculating initial attenuation values from the initial data that were acquired in a portion of the initial scan path sector corresponding to the additional scan path sector;

calculating additional attenuation values from the additional data;

subtracting the initial attenuation values from the additional attenuation values to determine difference values;

back-projecting the difference data to produce an image data matrix; and

adding the produced image data matrix to the image.

13. (Currently Amended) A method for producing a CT image of a region of interest within a body of a subject, comprising:

reconstructing a CT image of the body;

displaying each consecutive reconstructed slice on a display;

defining a region of interest which encompasses only a portion of the displayed slice ~~CT images~~; and

periodically updating the displayed slice ~~CT image~~ only in the region of interest.

14. (Previously Presented) A method according to claim 4, and comprising superimposing the CT image of the region of interest on another CT image encompassing a substantially greater portion of the cross-sectional area.

15. (Previously Presented) A method according to claim 14 wherein the updated image of the region of interest is produced utilizing the following method:

reconstructing an image of the slice using initial X-ray attenuation data acquired along an initial scan path sector; and

modifying the image to provide a modified image of the slice, responsive to additional X-ray attenuation data acquired along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than a predetermined reconstruction angle.

16. (Previously Presented) A method according to claim 18 wherein the region of interest is determined based on an expectation of a change in the CT image in the region of image.

17. (Previously Presented) A method according to claim 18, and including identifying an object of interest and wherein defining the region of interest comprises defining the region of interest in response to a determination of the position of the object of interest.

18. (Previously Presented) A method for producing a CT image of a region of interest within a body of a subject, the method comprising:

reconstructing a CT image of a slice of the body;

defining a region of interest within the CT image which includes an object of an interest;

altering the region of interest being reconstructed in response to a movement of the object; and

updating the CT image only in the region of interest.

19. (Original) A method according to claim 18, wherein altering the region of interest in response to movement of the object comprises determining a characteristic of the X-ray attenuation data indicative of the position of the object, and shifting the region of interest being reconstructed in response to a change in the characteristic.

20. (Original) A method according to claim 19, wherein determining the characteristic of the X-ray attenuation data comprises finding an extremum value of the data within a data window corresponding to the region of interest.

21. (Original) A method according to claim 20, wherein finding the extremum value of the data comprises preprocessing the data and finding a maximum value of the pre-processed data.

22. (Previously Presented) A method according to claim 18 wherein the CT image is a multi-slice image and wherein the position of the slices are determined based on a determination of the position of the object with respect to the slices.

23. (Currently Amended) A method of determining an optimal position for multiple CT slices, the method comprising:

reconstructing multiple slices based on a first set of data~~, the multiple slices including a region of interest~~;

displaying one of the slices in accordance with the determined position;

determining a ~~position of an object in the~~ region of interest in the displayed slice adjacent the object; and

during movement of the object, monitoring the position ~~movement~~ of the moving object and automatically at least one of (i) moving and updating the region of interest in the displayed slice and (ii) displaying and updating another of the reconstructed slices to track the movement of the object.

24. (Previously Presented) A method according to claim 18 wherein the object is a biopsy needle.

25-27. (Cancelled)

28. (Previously Presented) An imaging method for imaging a region in a region of interest in which changes are expected comprising:

reconstructing an image using initial X-ray attenuation data acquired along an initial scan path including a plurality of sectors;

defining a region of interest in the reconstructed image;

monitoring additional X-ray attenuation data through the region of interest acquired along an additional scan path sector having an angular extent substantially less than a predetermined reconstruction angle;

periodically modifying the reconstructed image in response to changes in the monitored X-ray attenuation data.

29-54. (Cancelled)

55. (Currently Amended) An imaging method including:

irradiating a subject with X-rays;

collecting an X-ray attenuation data which passed through the subject;

reconstructing multiple CT slices based on a first set of the X-ray attenuation data;

determining a position of a biopsy needle in the slices; and

re-reconstructing and displaying one of the slices based on the determined position.

56. (Currently Amended) An imaging [[The]] method ~~according to claim 13 and~~ including:

collecting X-ray attenuation data along a scan path;

reconstructing an initial volume CT image of the body, the volume image including a plurality of slices, each slice reconstructed using a portion of the initial X-ray attenuation data acquired along an initial scan path sector spanning a predetermined reconstruction angle;

defining a region of interest which encompasses only a portion of the CT image;

periodically modifying ~~the image~~ a displayed one of the slices including ~~using the following method~~:

~~reconstructing an initial CT image using an initial X-ray attenuation data acquired along an initial scan path sector spanning a predetermined reconstruction angle; and~~

modifying the ~~initial image~~ displayed slice to provide the updated ~~image~~ display of [[the]] a slice, responsive to additional X-ray attenuation data acquired along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than the predetermined reconstruction angle.

57. (Currently Amended) An imaging [[The]] method for a determination of a position of a biopsy needle ~~according to claim 26 and~~ including:

reconstructing a CT image from a plurality of views;

determining the position of the biopsy needle in the image;

determining a region of interest based on the determined position of the biopsy needle; and

periodically modifying the image only in the region of interest, including ~~using the following method~~:

reconstructing an initial image using initial X-ray attenuation data acquired over a predetermined reconstruction angle along an initial scan path sector; and

modifying the initial image to provide an updated image, responsive to additional X-ray attenuation data acquired along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than the predetermined reconstruction angle.

58. (Previously Presented) The method according to claim 28 wherein the periodically modifying of the image uses the following method:

reconstructing an initial image of the slice using initial X-ray attenuation data acquired along an initial scan path sector; and

modifying the image to provide a modified image of the slice, responsive to additional X-ray attenuation data acquired along an additional scan path sector in a vicinity of the axial position of the slice, the sector having an angular extent substantially less than a predetermined reconstruction angle.